CLAIMS:

1. A power converter comprising

an inductor and a controllable switch coupled to the inductor,

a switch controller for supplying a periodic switching signal with a repetition time and a duty cycle to the controllable switch to generate a periodical inductor current through the inductor,

a generator for generating an emulated signal based on timing information representing the repetition time and the duty cycle to emulate a current signal being representative of the inductor current,

a comparator for comparing the emulated signal with the current signal to obtain an error signal, and

a generator controller for receiving the error signal to supply a control signal to the generator for adapting a property of the emulated signal to become substantially equal to a property of the current signal.

2. A power converter as claimed in claim 1, wherein the power converter further comprises means for supplying the timing information comprising a square wave signal having the repetition time and the duty cycle, and the generator comprises

means for receiving the control signal to adapt a DC-level or an amplitude of the square wave signal for supplying an adapted square wave signal, and

an integrator for integrating the adapted square wave signal to supply the emulated signal.

3. A power converter as claimed in claim 1, wherein the generator controller comprises a filter for low pass filtering the error signal to obtain a filtered error signal being supplied to the generator controller.

4. A power converter as claimed in claim 1, wherein the generator controller comprises timing means for generating a window in time being shorter than the repetition time to control the generator with the error signal during the window only.

5. A power converter as claimed in claim 4, wherein the timing means comprise an error signal multiplier for multiplying the error signal with zero outside the window and with a non-zero constant inside the window.

6. A power converter as claimed in claim 1, wherein the generator controller comprises timing means for generating a window in time being shorter than the repetition time to control the comparator to be active during the window only.

7. A power converter as claimed in claim 2, wherein the means for adapting a DC-level or an amplitude of the square wave signal comprise an adder for adding a DC-level to the square wave signal.

8. A power converter as claimed in claim 2, wherein the means for adapting a DC-level or an amplitude of the square wave signal comprise a multiplier for multiplying the square wave signal with a DC-level.

9. A power converter as claimed in claim 1, wherein the power converter further comprises means for supplying the timing information comprising a square wave signal having the repetition time and the duty cycle, and the generator comprises

an adder for adding a DC-level to the square wave signal, and a multiplier for multiplying the square wave signal with a DC-level to obtain an adapted square wave signal, and

an integrator for integrating the adapted square wave signal to obtain the emulated signal,

the comparator being arranged for comparing the emulated signal with the current signal to obtain a first error signal,

the power converter further comprises a further comparator for comparing the emulated signal with the current signal to obtain a second error signal,

the generator controller comprising

first timing means for generating a first window in time,

second timing means for generating a second window in time, both the first and the second window being shorter than the repetition time,

a first filter for filtering the first error signal during the first window only, to supply a first filtered error signal to the adder, and

a second filter for filtering the second error signal during the second window only, to supply a second filtered error signal to the multiplier.

10. A power converter as claimed in claim 1, further comprising a current measuring element being arranged to measure a current through the inductor during a period in time when the controllable switch is non-conductive.

11. A power converter as claimed in claim 1, wherein the power converter comprises a buck converter and the switch controller is adapted to control the buck converter in a continuous mode.

12. A multi-phase buck-converter comprising a power converter as claimed in claim 1, the controllable switch and the inductor being arranged in series between a DC-input voltage and a load,
the multi-phase buck-converter further comprises a series arrangement of a further controllable switch and a further inductor, the series arrangement being arranged between the DC-input voltage and the load,
the switch controller being adapted for supplying a further periodic switching signal to the further controllable switch, the first mentioned switching signal and the further switching signal having time shifted slopes.